Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 108,923 (2007)	20-Feb-2007

Q(β^-)=600.8 *20*; S(n)=10646.5 *21*; S(p)=8486.2 *13*; Q(α)=−10185.2 *20* 2012Wa38
Note: Current evaluation has used the following Q record 600.3 1910646.3 *20* 8486.0 *12*−10164 9 2003Au03.
Q(β^-): Other: 599.2 *10* from the current ^{47}Sc β^- decay scheme.

^{47}Sc Levels

Cross Reference (XREF) Flags

A	^{47}Ca β^- decay	E	^{46}Ca(p,p),(p,p′),(p,γ) IAR	I	^{48}Ti(t,α)
B	^{36}S(^{14}C,p2nγ)	F	^{46}Ca(^{3}He,d)	J	^{49}Ti(d,α)
C	^{44}Ca(α,p),(α,pγ)	G	^{48}Ti(μ^-,nγ): At rest	K	^{50}Ti(p,α)
D	^{45}Sc(t,p)	H	^{48}Ti(d,^{3}He)		

E(level)†	J$^\pi$‡	T$_{1/2}$#	XREF	Comments
0.0	7/2$^-$@	3.3492 d *6*	ABCDEFGHIJK	%β^-=100 T=5/2 μ=+5.34 *2*; Q=−0.22 *3* (2005St24,1966Co13) J$^\pi$: J=7/2 from AB (1976Fu06,1966Co13); π=− from L(p)=3. T$_{1/2}$: weighted av (1986Re12) based on individual values of 3.3500 d 6 (γ′s; NaI integral counting, 10 d′s), 3.3480 d *31* and 3.3525 d *15* (159γ; HPGe, 10 d′s), and 3.3478 d *10*, 3.3491 d *19*, and 3.3483 d *6* (β^-′s; ic, ≥5 T$_{1/2}$′s). Others: 3.345 d *3* (weighted av of NaI (29 keV≤Eγ≤10 MeV; 13 and 17 T$_{1/2}$′s), NaI (120 keV≤Eγ 200 keV; 13 T$_{1/2}$′s), and pc (β′s; 7 and 15 T$_{1/2}$′s) from 1968Me07) and 3.341 d *3* (1980Mo26; 7-9 and 17-19 d after ^{46}Ca(n,γ); 159γ). See also 1986Re12. μ,Q: AB; Q not corrected for polarization. ^{45}Sc standard.
766.83g *9*	(3/2)$^+$@	272 ns *8*	A C EFGHIJK	μ=0.35 *5* (2005St24,1968Fo02) J$^\pi$: L(p)=2 in (d,^{3}He), (^{3}He,d), and (t,α). J^π=3/2$^+$ expected from shell model supported by C^{2}S data. T$_{1/2}$: weighted av of 270 ns *12* from β^- decay and 274 ns *10* from (α,pγ). μ from (α,pγ).
807.89 *8*	3/2$^-$	15 ps *4*	A CDEFGHI	J$^\pi$: L(p)=1 in (^{3}He,d), (d,^{3}He), and (t,α). Ne 1/2$^-$ from D,E2 γ to 7/2$^-$.
1123? *12*			J	
1145? *2*			HIj	
1146.99& *4*	11/2$^-$@	3.2 ps *11*	BCDE jK	J$^\pi$: 7/2 or 11/2 from $\gamma(\theta)$ in (α,pγ); linear polarization (1147γ) in (α,pγ) selects 11/2. π=− from E2 γ to g.s. T$_{1/2}$: other: >0.83 ps from DSAM in (^{14}C,p2nγ).
1297.12 *8*	5/2$^-$	62 fs *21*	A CDE G IJ	T=5/2 J$^\pi$: M1+E2 γ to 3/2$^-$; D+Q γ to 7/2$^-$. T: From β^- decay.
1316? *3*			D	
1391.3 *3*	1/2$^+$@	9 ps *3*	C EF HI K	
1404.4g *3*	5/2$^+$	0.97 ps *28*	C E G	J$^\pi$: 5/2 from $\gamma(\theta)$ in (α,pγ). π=− by M1+E2 γ to (3/2)$^+$.
1639 *12*			J	
1717? *12*			J	
1745? *20*			J	
1797.6 *3*	3/2,5/2$^-$,7/2$^-$	0.21 ps *6*	C E jk	J$^\pi$: from $\gamma(\theta)$ and RUL′s in (α,pγ).
1798? *6*	1/2$^+$		D Ij	

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Adopted Levels, Gammas (continued)

^{47}Sc Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
1857.1g 3	5/2−,7/2(+)@	0.30 ps 6	C IJk	Jπ: 5/2−,7/2 from γ(θ). Ne 7/2− from D,E2 γ to (3/2)+. Jπ=7/2+ favored by band structure.
1878.2 7	9/2−	0.12 ps 6	A CDE	Jπ: J=5/2 to 9/2 from log ft in β− decay. π=− from L(t,p)=2. γ(θ)(1879γ) in (α,pγ) excludes 7/2. Ne 5/2 from D+Q γ to 11/2−.
2002.3 3	3/2+	0.40 ps 9	C E HI	Jπ: L(d,3He),(t,α)=2. γ(θ) in (α,pγ) excludes 5/2.
2148.2& 5		>2 ps	B DE	Jπ: 7/2≤J≤15/2 proposed in (α,pγ) not adopted by evaluator. $T_{1/2}$: other: >4.2 ps from DSAM in (^{14}C,p2nγ).
2207.5 3	(7/2−)a	0.08 ps 4	CDE I	Jπ: this may be a close doublet with J≤7/2 for one member and ≥7/2 for the other. See (α,pγ) for discussion.
2232? 5	7/2−a		D	
2381.3 8	5/2+@	<0.17 ps	C E HI K	Jπ: L(p)=2 in (d,3He) and (t,α). Ne 3/2 from D,E2 γ to 7/2−.
2408.6g 16	7/2−,9/2	0.21 ps 11	Cde	Jπ: from γ(θ)(2407γ) in (α,pγ) and RUL. Band structure favors 9/2+.
2410.3 10			Cde	Jπ: ≤7/2 from (α,pγ) not adopted by evaluator.
2499.4 7	7/2−a	<0.15 ps	CDEF h	
2529.4 9	1/2+	<0.21 ps	DE hI	
2641.9& 5		0.32d ps 6	BCd k	Jπ: (13/2 to 17/2) in (α,pγ) and speculated 13/2− in (^{14}C,p2nγ) not adopted by evaluator. $T_{1/2}$: other: 0.40 ps 29 from DSAM in (α,pγ).
2650 2			dE k	
2810b 2	1/2−,3/2−		EF hi	
2836b 2	1/2−,3/2−c		EF hi	
2909 2			C E hI	Jπ: 3/2− proposed in (α,p), based on empirical J dependence, not adopted by evaluator.
2941 2			DE	
3070 7			D	
3102e 2	−@a		D K	
3135 8	(−)a		DEF I	
3205b 2	1/2−,3/2−		DEF hI	
3250 5	7/2−a		D f	
3256 3	1/2−,3/2−		f hI	
3262b 2	1/2−,3/2−c		EF h	
3290 2			E h	
3302.5 10		0.07d ps 3	B	Jπ: 17/2 speculated in (^{14}C,p2nγ) not adopted by evaluator.
3320			C	Jπ: 3/2− proposed in (α,p), based on empirical J dependence, not adopted by evaluator.
3413 2	−a		D	
3484e 4	(−)a		D K	
3537 4	7/2−a		D	
3576 2			DE	
3656? 2			D	
3728 2			E	
3804 4	3/2+,5/2+		D k	
3860 5	1/2+		hI k	
3867.0 11		0.21d ps 6	B	Jπ: 19/2 speculated in (^{14}C,p2nγ) not adopted by evaluator.
3958 5	3/2+,5/2+		D h	
4008 6	−a		D	
4019 2			E hI	
4031 5	5/2−,7/2−c		F I	
4085 2	3/2−		DEF I	Jπ: L=2 in (t,p) and L=1 in (3He,d).
4099 2			Ef h	

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Adopted Levels, Gammas (continued)

^{47}Sc Levels (continued)

E(level)[†]	Jπ[‡]	XREF
4111 *3*		D f h
4191 *2*		D
4257 *3*		D h
4275 *5*	1/2⁻,3/2⁻[c]	F h
4291 *7*		D hI
4355 *2*	7/2⁻[a]	D
4378 *5*	1/2⁻,3/2⁻[c]	F
4389 *5*	3/2⁺,5/2⁺[c]	F hI
4408 *2*		E h
4475 *2*		DE h
4505 *9*		hI
4515 *5*	1/2⁻,3/2⁻[c]	F
4553 *2*	3/2⁺,5/2⁺	DE hI
4609 *2*	1/2⁺	EF I
4617 *3*	7/2⁻[a]	D
4631 *2*	1/2⁻,3/2⁻[c]	EF
4690 *2*		DE hI
4721 *2*		DE h
4753 *7*		hI
4792 *2*		E
4802? *2*		E
4810 *5*	7/2⁻[a]	D
4817 *5*	3/2⁺,5/2⁺[c]	F
4831 *2*		E
4860 *7*		D I
4908 *10*	5/2⁻,7/2⁻[c]	F
4956 *2*		DE
4998 *2*		E I
5030 *10*	1/2⁻,3/2⁻[c]	F
5050 *8*		D
5108 *6*		D I
5151 *2*	−[a]	DE
5252 *3*		D
5306 *5*		I
5317 *7*	7/2⁻[a]	D
5319 *10*	1/2⁻,3/2⁻[c]	F
5361 *5*		I
5381 *3*	7/2⁻[a]	I
5415 *10*	1/2⁻,3/2⁻[c]	F
5473 *5*		D
5509 *2*		DE
5525 *10*	1/2⁻,3/2⁻[c]	F
5542 *6*		I
5561 *4*	7/2⁻[a]	I
5571 *7*	1/2⁻,3/2⁻@[c]	F I K
5600 *2*		E h
5659 *6*		hI
5685 *4*		D h
5719[e] *4*		D F h
5760 *6*		D hI k
5824[e] *2*	1/2⁻,3/2⁻[c]	D F k
5855 *3*		D h
5893 *4*	−[a]	D
5946[e] *4*	3/2⁺,5/2⁺[c]	D F hI

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Adopted Levels, Gammas (continued)

^{47}Sc Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
5987 *9*		I K	
6010 *6*	7/2$^-$[*a*]	D i	
6040 *10*	3/2$^+$,5/2$^+$[*c*]	F hi	
6096 *5*	7/2$^-$	D	
6133 *9*		D h	
6184 *3*		D h	
6223 *5*		D hI	
6262 *8*	7/2$^-$[*a*]	D F I	
6339 *3*		D h	
6361 *4*		D h	
6383 *2*		E h	
6410 *2*		D h	
6441 *6*		D hI	
6486 *3*		D f h	
6523 *5*	1/2$^-$,3/2$^-$[*c*]	f I	
6546 *5*		D h	
6584 *2*		E h	
6621 *8*		D hI K	
6686 *7*		D	
6724 *2*		E	
6786 *7*		I	
6801 *4*		hI	
6863 *3*		hI	
6876 *6*		hI	
6964 *5*	3/2$^+$,5/2$^+$	hI	
7117 *5*		hI	
7427 *6*		hI	
7523 *10*	1/2$^-$,3/2$^-$[*c*]	F	
7683 *7*		hI	
7807 *5*		I	
8.40×10^3	(7/2$^-$)[@]	K	T=(7/2) Jπ,T: identified by the evaluator as possible IAS of ^{47}Ca g.s.
10304.9 *23*	(3/2$^-$)[*f*]	E	T=7/2
10307.3 *23*	(3/2$^-$)[*f*]	E	T=7/2
10309.8 *23*	(3/2$^-$)[*f*]	E	T=7/2

[†] Energies of states connected by gammas are from β^- decay for E(level)<1300 keV, from (α,pγ) for 1300 keV<E(level)<2650 keV, and from (p,γ) for the other states. Other energies from (t,α), except as noted.

[‡] From angular momentum transfer in (t,α), except as noted. Data from (^{3}He,d) and (d,^{3}He) are consistent.

[#] From (α,pγ), DSAM or RDM, except as noted. See (p,γ) for $\Gamma_{p'}$s and $\Gamma_{\gamma'}$s.

[@] See (p,α) for possible shell-model configurations.

[&] From (^{14}C,p2nγ).

[*a*] From angular momentum transfer in (t,p).

[*b*] Anti-IAS states? see (p,p).

[*c*] From angular momentum transfer in (^{3}He,d).

[*d*] From DSAM in (^{14}C,p2nγ).

[*e*] From (t,p).

[*f*] L=1 and primary γ-deexcitation pattern in (p,p),(p,p′),(p,γ). Component of IAS of 2.02-MeV state in ^{47}Ca.

[*g*] Band(A): K$^\pi$=3/2$^+$ rotational band? (1972Ba95,1974To05).

Adopted Levels, Gammas (continued)

$\gamma(^{47}Sc)$

B(M1)(W.u.): See 1975Vi02 for primary γ B(M1)′s.
See $^{48}Ti(\mu^-,n)$ for unplaced gammas.

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[c]	Comments
766.83	$(3/2)^+$	767.1 *3*	100	0.0	$7/2^-$	(M2)		0.000334 *5*	B(M2)(W.u.)=0.0330 *10* α(K)=0.000304 *5*; α(L)=2.69×10^{-5} *4*; α(M)=3.33×10^{-6} *5*; α(N+..)=1.87×10^{-7} *3* α(N)=1.87×10^{-7} *3* Mult.: D,Q from comparison to RUL. ΔJ^π=2,yes from level scheme.
807.89	$3/2^-$	41.06 *5*	0.092 *10*	766.83	$(3/2)^+$	(E1)		0.399	B(E1)(W.u.)=0.00046 *14* α(K)=0.363 *6*; α(L)=0.0321 *5*; α(M)=0.00392 *6*; α(N+..)=0.000205 *3* α(N)=0.000205 *3* Mult.: D from comparison to RUL. $\Delta\pi$=yes from level scheme.
		807.86 *10*	100 *3*	0.0	$7/2^-$	(E2)		0.000183 *3*	B(E2)(W.u.)=11 *3* α(K)=0.0001667 *24*; α(L)=1.467×10^{-5} *21*; α(M)=1.82×10^{-6} *3* α(N+..)=1.015×10^{-7} *15* α(N)=1.015×10^{-7} *15* Mult.: D,E2 from comparison to RUL. ΔJ^π=2,no from level scheme.
1146.99	$11/2^-$	1146.97[#] *4*	100[#]	0.0	$7/2^-$	E2		7.98×10^{-5} *12*	B(E2)(W.u.)=9 *3* α(K)=6.96×10^{-5} *10*; α(L)=6.10×10^{-6} *9*; α(M)=7.57×10^{-7} *11*; α(N+..)=3.34×10^{-6} *5* α(N)=4.24×10^{-8} *6*; α(IPF)=3.29×10^{-6} *5*
1297.12	$5/2^-$	489.23 *10*	8.8 *5*	807.89	$3/2^-$	M1+E2	−0.21[@] *4*	3.66×10^{-4} *10*	B(M1)(W.u.)=0.23 *8*; B(E2)(W.u.)=1.1×10^2 *6* α(K)=0.000333 *9*; α(L)=2.94×10^{-5} *8*; α(M)=3.64×10^{-6} *10*; α(N+..)=2.04×10^{-7} *6* α(N)=2.04×10^{-7} *6* Mult.,δ: from $\gamma\gamma(\theta)$ and pol in β^- decay.
		530.6 *5*	0.127 *13*	766.83	$(3/2)^+$	(E1)[&]		0.000188 *3*	B(E1)(W.u.)=6.5×10^{-5} *24* α(K)=0.0001710 *25*; α(L)=1.500×10^{-5} *22*; α(M)=1.86×10^{-6} *3* α(N+..)=1.039×10^{-7} *15* α(N)=1.039×10^{-7} *15*
		1297.09 *10*	100	0.0	$7/2^-$	M1+E2	−0.020[@] *16*	6.82×10^{-5} *10*	B(M1)(W.u.)=0.15 *5*; B(E2)(W.u.)=0.09 *+15−9*

$^{47}_{21}Sc_{26}$-5

Adopted Levels, Gammas (continued)

γ(^{47}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[c]	Comments
									α(K)=4.40×10^{-5} *7*; α(L)=3.85×10^{-6} *6*; α(M)=4.78×10^{-7} *7*; α(N+..)=1.98×10^{-5} *3* α(N)=2.69×10^{-8} *4*; α(IPF)=1.98×10^{-5} *3* Mult.: from βγ-CP in β$^-$ decay.
1391.3	1/2$^+$	583.2	100 *5*	807.89	3/2$^-$	(E1)[&]		0.0001490 *21*	B(E1)(W.u.)=0.00025 *9* α(K)=0.0001355 *19*; α(L)=1.189×10^{-5} *17*; α(M)=1.472×10^{-6} *21* α(N+..)=8.24×10^{-8} *12* α(N)=8.24×10^{-8} *12*
		623.8	16 *5*	766.83	(3/2)$^+$	D,E2[a]			
1404.4	5/2$^+$	596.4	12 *3*	807.89	3/2$^-$	(E1)[&]		0.0001410 *20*	B(E1)(W.u.)=0.00021 *11* α(K)=0.0001284 *18*; α(L)=1.126×10^{-5} *16*; α(M)=1.395×10^{-6} *20* α(N+..)=7.81×10^{-8} *11* α(N)=7.81×10^{-8} *11*
		637.0	29 *3*	766.83	(3/2)$^+$	M1+E2	−0.72 *28*	0.00025 *3*	B(M1)(W.u.)=0.012 *7*; B(E2)(W.u.)=4.E+1 *3* α(K)=0.00023 *3*; α(L)=2.02×10^{-5} *24*; α(M)=2.5×10^{-6} *3*; α(N+..)=1.40×10^{-7} *16* α(N)=1.40×10^{-7} *16*
		1404.4	100 *47*	0.0	7/2$^-$	(E1(+M2))	−0.04 *8*	2.17×10^{-4} *4*	B(E1)(W.u.)=0.00014 *9*; B(M2)(W.u.)=0.5 *+21−5* α(K)=2.29×10^{-5} *7*; α(L)=2.00×10^{-6} *7*; α(M)=2.48×10^{-7} *8*; α(N+..)=0.000192 *4* α(N)=1.40×10^{-8} *5*; α(IPF)=0.000192 *4* Mult.: D(+Q) from γ(θ) in (α,pγ) and comparison to RUL. Δπ=yes from level scheme.
1797.6	3/2,5/2$^-$,7/2$^-$	500.6	92 *14*	1297.12	5/2$^-$	D[a]			
		989.6	100 *14*	807.89	3/2$^-$	D+Q,E2			δ: see (α,pγ) for possible δ′s.
1857.1	5/2$^-$,7/2$^{(+)}$	452.7	2.2 *17*	1404.4	5/2$^+$	D,E2[a]			
		1089.7	10 *5*	766.83	(3/2)$^+$	D,E2[a]			
		1857.1	100 *5*	0.0	7/2$^-$	D+Q			δ: see (α,pγ) for possible δ′s.
1878.2	9/2$^-$	581.2[d]		1297.12	5/2$^-$				
		731.6	45 *6*	1146.99	11/2$^-$	(M1+E2)[b]	−0.14[@] *11*	1.49×10^{-4} *5*	B(M1)(W.u.)=0.14 *8*; B(E2)(W.u.)=13 *+22−13* α(K)=0.000136 *4*; α(L)=1.19×10^{-5} *4*; α(M)=1.48×10^{-6} *5*; α(N+..)=8.31×10^{-8} *24* α(N)=8.31×10^{-8} *24* BM1W,BE2W If Iγ(581γ) is negligible.

Adopted Levels, Gammas (continued)

γ(^{47}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[c]	Comments
1878.2	9/2$^-$	1878.2	100 *6*	0.0	7/2$^-$	(M1+E2)[b]	−0.14[@] *9*	0.000226 *4*	B(M1)(W.u.)=0.019 *10*; B(E2)(W.u.)=0.3 *+4−3* α(K)=2.29×10^{-5} *4*; α(L)=2.00×10^{-6} *3*; α(M)=2.48×10^{-7} *4*; α(N+..)=0.000200 *4* α(N)=1.398×10^{-8} *20*; α(IPF)=0.000200 *4* BM1W,BE2W If Iγ(581γ) is negligible.
2002.3	3/2$^+$	597.9	38 *10*	1404.4	5/2$^+$	D,E2[a]			
		705.3	34 *10*	1297.12	5/2$^-$	(E1)[&]		9.56×10^{-5} *14*	B(E1)(W.u.)=0.0007 *3* α(K)=8.70×10^{-5} *13*; α(L)=7.62×10^{-6} *11*; α(M)=9.45×10^{-7} *14*; α(N+..)=5.29×10^{-8} *8* α(N)=5.29×10^{-8} *8*
		1194.3	100 *14*	807.89	3/2$^-$	(E1(+M2))	0.00 *3*	8.47×10^{-5} *12*	B(E1)(W.u.)=0.00044 *13* α(K)=3.02×10^{-5} *5*; α(L)=2.64×10^{-6} *4*; α(M)=3.27×10^{-7} *5*; α(N+..)=5.15×10^{-5} *8* α(N)=1.84×10^{-8} *3*; α(IPF)=5.15×10^{-5} *8* Mult.: D(+Q) from γ(θ) in (α,pγ). Δπ=yes from level scheme. δ: 0.00 *18* from γ(θ) in (α,pγ). Comparison to RUL and ΔJ^π limits δ to <0.03.
2148.2		1001.2[#] *5*	100[#]	1146.99	11/2$^-$	D(+Q)	+0.10 *13*		
2207.5	(7/2$^-$)	329.3	16 *9*	1878.2	9/2$^-$	D,(E2)[a]			
		910.5	20 *14*	1297.12	5/2$^-$	D,(E2)[a]			
		1399.5	100 *34*	807.89	3/2$^-$	(E2)		0.0001040 *15*	B(E2)(W.u.)=6.E+1 *4* α(K)=4.49×10^{-5} *7*; α(L)=3.93×10^{-6} *6*; α(M)=4.88×10^{-7} *7*; α(N+..)=5.45×10^{-5} *8* α(N)=2.74×10^{-8} *4*; α(IPF)=5.45×10^{-5} *8* Mult.: D,(E2) from comparison to RUL. ΔJ^π=2,no from level scheme.
		2207.5	91 *23*	0.0	7/2$^-$	D,(E2)			
2381.3	5/2$^+$	1573.0	41 *27*	807.89	3/2$^-$	(E1)[&]		0.000342 *5*	B(E1)(W.u.)>0.00014 α(K)=1.90×10^{-5} *3*; α(L)=1.658×10^{-6} *24*; α(M)=2.06×10^{-7} *3*; α(N+..)=0.000321 *5* α(N)=1.156×10^{-8} *17*; α(IPF)=0.000321 *5*
		1613.9	100 *23*	766.83	(3/2)$^+$	D,E2[a]			
		2381.3	86 *23*	0.0	7/2$^-$	(E1)[&]		0.000905 *13*	B(E1)(W.u.)>8.6×10^{-5} α(K)=1.027×10^{-5} *15*; α(L)=8.96×10^{-7} *13*; α(M)=1.111×10^{-7} *16* α(N+..)=0.000893 *13* α(N)=6.26×10^{-9} *9*; α(IPF)=0.000893 *13*

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Adopted Levels, Gammas (continued)

γ(^{47}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[c]	Comments
2408.6	7/2$^-$,9/2	1262	32 *6*	1146.99	11/2$^-$	D,E2[a]			
		2409	100 *6*	0.0	7/2$^-$	D+Q			δ: see (α,pγ) for possible δ's.
2410.3		1602	100 *30*	807.89	3/2$^-$				
		1643	64 *30*	766.83	(3/2)$^+$				
2499.4	7/2$^-$	621.2	40 *10*	1878.2	9/2$^-$				
		1202.4	100 *12*	1297.12	5/2$^-$	(M1(+E2))	−0.05 *8*	6.23×10^{-5} *9*	B(M1)(W.u.)>0.043 α(K)=5.07×10^{-5} *8*; α(L)=4.44×10^{-6} *7*; α(M)=5.51×10^{-7} *8*; α(N+..)=6.56×10^{-6} *11* α(N)=3.10×10^{-8} *5*; α(IPF)=6.53×10^{-6} *11* Mult.: D(+Q) from γ(θ) in (α,pγ). Δπ=no from level scheme.
		2499.4	52 *10*	0.0	7/2$^-$	(M1(+E2))	+0.54 *65*	0.00050 *4*	B(M1)(W.u.)>0.00090 α(K)=1.44×10^{-5} *4*; α(L)=1.26×10^{-6} *4*; α(M)=1.56×10^{-7} *4*; α(N+..)=0.00048 *4* α(N)=8.82×10^{-9} *22*; α(IPF)=0.00048 *4* Mult.: D(+Q) from γ(θ) in (α,pγ). Δπ=no from level scheme.
2529.4	1/2$^+$	1721	100 *18*	807.89	3/2$^-$	(E1)[&]		0.000454 *7*	B(E1)(W.u.)>0.00033 α(K)=1.649×10^{-5} *23*; α(L)=1.440×10^{-6} *21*; α(M)=1.785×10^{-7} *25* α(N+..)=0.000436 *7* α(N)=1.004×10^{-8} *14*; α(IPF)=0.000436 *7*
		1762	45 *18*	766.83	(3/2)$^+$	D,E2[a]			
2641.9		493.66[#] *10*	100[#] *5*	2148.2		D(+Q)	0.00 *6*		δ: from γ(θ) in (^{14}C,p2nγ) if J_i=13/2 and J_f=15/2.
		763.0[#d]	<32[#]	1878.2	9/2$^-$				
		1494.9[#d]	<117[#]	1146.99	11/2$^-$				
3302.5		1154.3[#] *9*	100[#]	2148.2		D,E2[a]			
3867.0		564.46[#] *30*	100[#]	3302.5		D,M1+E2[a]			δ: ≤0.26 *5* if M1+E2 from comparison to RUL.
10304.9	(3/2$^-$)	3576	64	6724					
		3716	39	6584					
		3917	45	6383					
		4700	43	5600					
		4791	27	5509					
		5149	27	5151	–				
		5302	34	4998					
		5344	36	4956					
		5469	11	4831					
		5579	61	4721					

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Adopted Levels, Gammas (continued)

$\gamma(^{47}Sc)$ (continued)

E_i(level)	J^{π}_i	E_{γ}†	I_{γ}†	E_f	J^{π}_f
10304.9	(3/2$^-$)	5610	18	4690	
		5691	41	4609	1/2$^+$
		5747	100	4553	3/2$^+$,5/2$^+$
		5825	14	4475	
		6202	14	4099	
		6216	20	4085	3/2$^-$
		6282	27	4019	
		6572	20	3728	
		6724	41	3576	
		7010	25	3290	
		7038	14	3262	1/2$^-$,3/2$^-$
		7095	27	3205	1/2$^-$,3/2$^-$
		7167	64	3135	($^-$)
		7358	34	2941	
		7390	23	2909	
		7464	48	2836	1/2$^-$,3/2$^-$
		7490	34	2810	1/2$^-$,3/2$^-$
		8094	27	2207.5	(7/2$^-$)
		8298	14	2002.3	3/2$^+$
		8502	48	1797.6	3/2,5/2$^-$,7/2$^-$
		8895	41	1404.4	5/2$^+$
		8910	23	1391.3	1/2$^+$
		9003	73	1297.12	5/2$^-$
		9491	20	807.89	3/2$^-$
		9532	18	766.83	(3/2)$^+$
		10299	23	0.0	7/2$^-$
10307.3	(3/2$^-$)	3578	10	6724	
		3718	4	6584	
		3919	24	6383	
		4702	19	5600	
		4793	15	5509	
		5151	20	5151	$^-$
		5304	65	4998	
		5346	10	4956	
		5471	15	4831	
		5500	13	4802?	
		5510	16	4792	
		5581	10	4721	
		5612	13	4690	
		5671	7	4631	1/2$^-$,3/2$^-$
		5693	15	4609	1/2$^+$
		5827	4	4475	
10307.3	(3/2$^-$)	5895	3	4408	
		6204	9	4099	
		6218	5	4085	3/2$^-$
		6284	17	4019	
		6726	6	3576	
		7012	10	3290	
		7097	12	3205	1/2$^-$,3/2$^-$
		7169	12	3135	($^-$)
		7361	25	2941	
		7393	8	2909	
		7466	7	2836	1/2$^-$,3/2$^-$
		7492	4	2810	1/2$^-$,3/2$^-$
		7652	14	2650	
		7774	12	2529.4	1/2$^+$
		7802	7	2499.4	7/2$^-$
		8096	9	2207.5	(7/2$^-$)
		8300	13	2002.3	3/2$^+$
		8505	40	1797.6	3/2,5/2$^-$,7/2$^-$
		8897	10	1404.4	5/2$^+$
		8912	56	1391.3	1/2$^+$
		9005	11	1297.12	5/2$^-$
		9494	28	807.89	3/2$^-$
		9534	9	766.83	(3/2)$^+$
		10301	100	0.0	7/2$^-$
10309.8	(3/2$^-$)	3580	35	6724	
		3720	16	6584	
		3921	57	6383	
		4704	65	5600	
		4795	41	5509	
		5153	49	5151	$^-$
		5306	27	4998	
		5348	47	4956	
		5473	28	4831	
		5502	57	4802?	
		5512	24	4792	
		5614	30	4690	
		5672	46	4631	1/2$^-$,3/2$^-$
		5695	35	4609	1/2$^+$
		5751	19	4553	3/2$^+$,5/2$^+$
		5829	8	4475	
		5897	15	4408	
		6206	20	4099	

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Adopted Levels, Gammas (continued)

γ(^{47}Sc) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	E_i(level)	E_γ †	I_γ †	E_f	J_f^π
10309.8	(3/2$^-$)	6220	42	4085	3/2$^-$	10309.8	7654	20	2650	
		6286	41	4019			7776	18	2529.4	1/2$^+$
		6577	15	3728			7805	27	2499.4	7/2$^-$
		6728	27	3576			8098	84	2207.5	(7/2$^-$)
		7014	26	3290			8302	54	2002.3	3/2$^+$
		7042	51	3262	1/2$^-$,3/2$^-$		8507	36	1797.6	3/2,5/2$^-$,7/2$^-$
		7099	12	3205	1/2$^-$,3/2$^-$		8900	42	1404.4	5/2$^+$
		7171	42	3135	($^-$)		8914	100	1391.3	1/2$^+$
		7363	61	2941			9008	91	1297.12	5/2$^-$
		7395	53	2909			9496	97	807.89	3/2$^-$
		7468	41	2836	1/2$^-$,3/2$^-$		9537	47	766.83	(3/2)$^+$
		7494	84	2810	1/2$^-$,3/2$^-$		10303	66	0.0	7/2$^-$

† From β^- decay for E(level)<1300 and (α,pγ) for other bound-state transitions, except as noted. Primary γ's from (p,γ). Iγ is the relative photon branching ratio from each state.

‡ From $\gamma(\theta)$ in (α,pγ) and comparison to RUL, except as noted.

From (^{14}C,p2nγ).

@ As recommended by 1978Kr19.

& D,E2 from comparison to RUL. $\Delta\pi$=yes from level scheme.

a From comparison to RUL.

b D+Q from $\gamma(\theta)$ in (α,pγ). $\Delta\pi$=no from level scheme.

c Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

d Placement of transition in the level scheme is uncertain.

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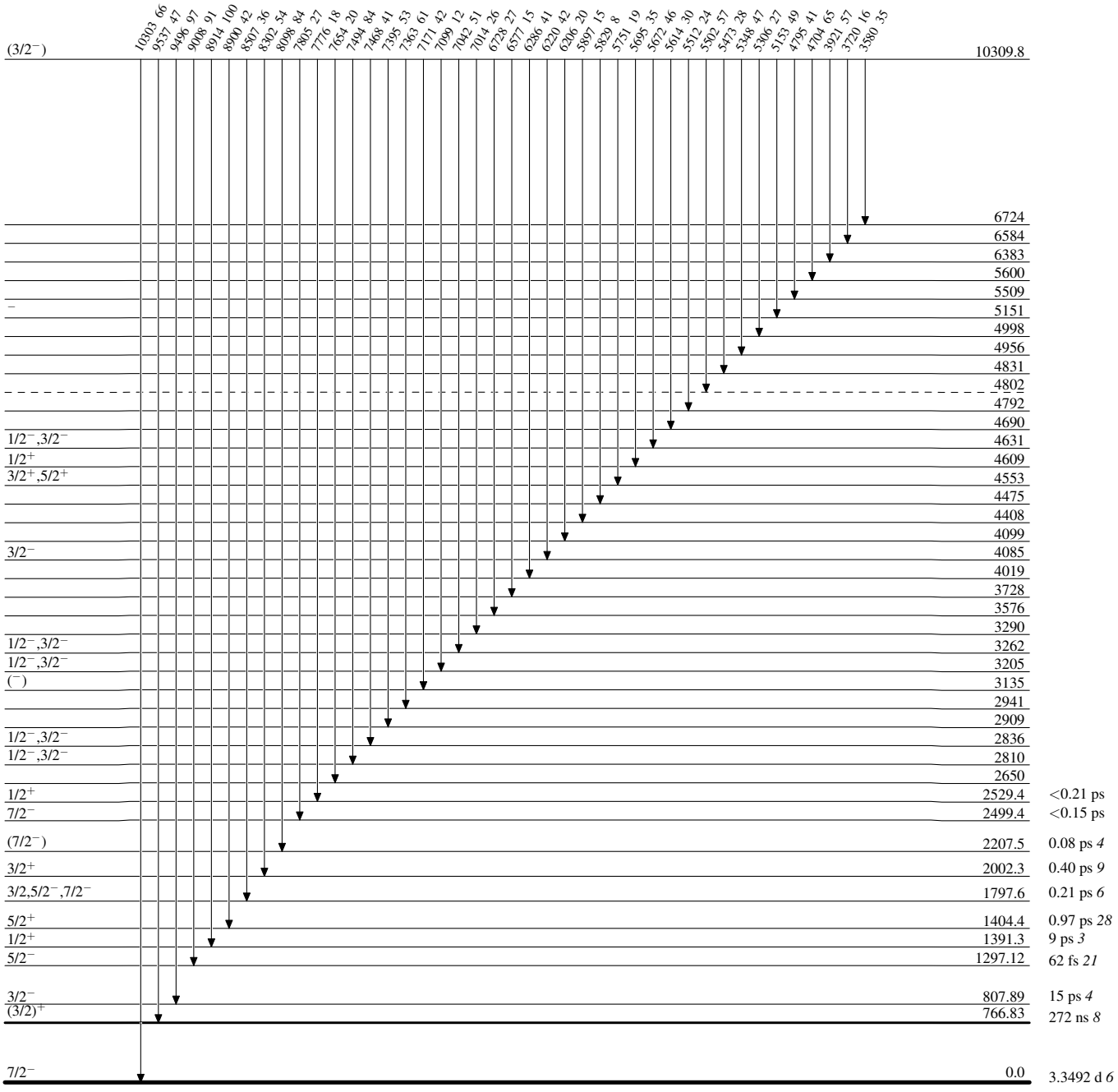
Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



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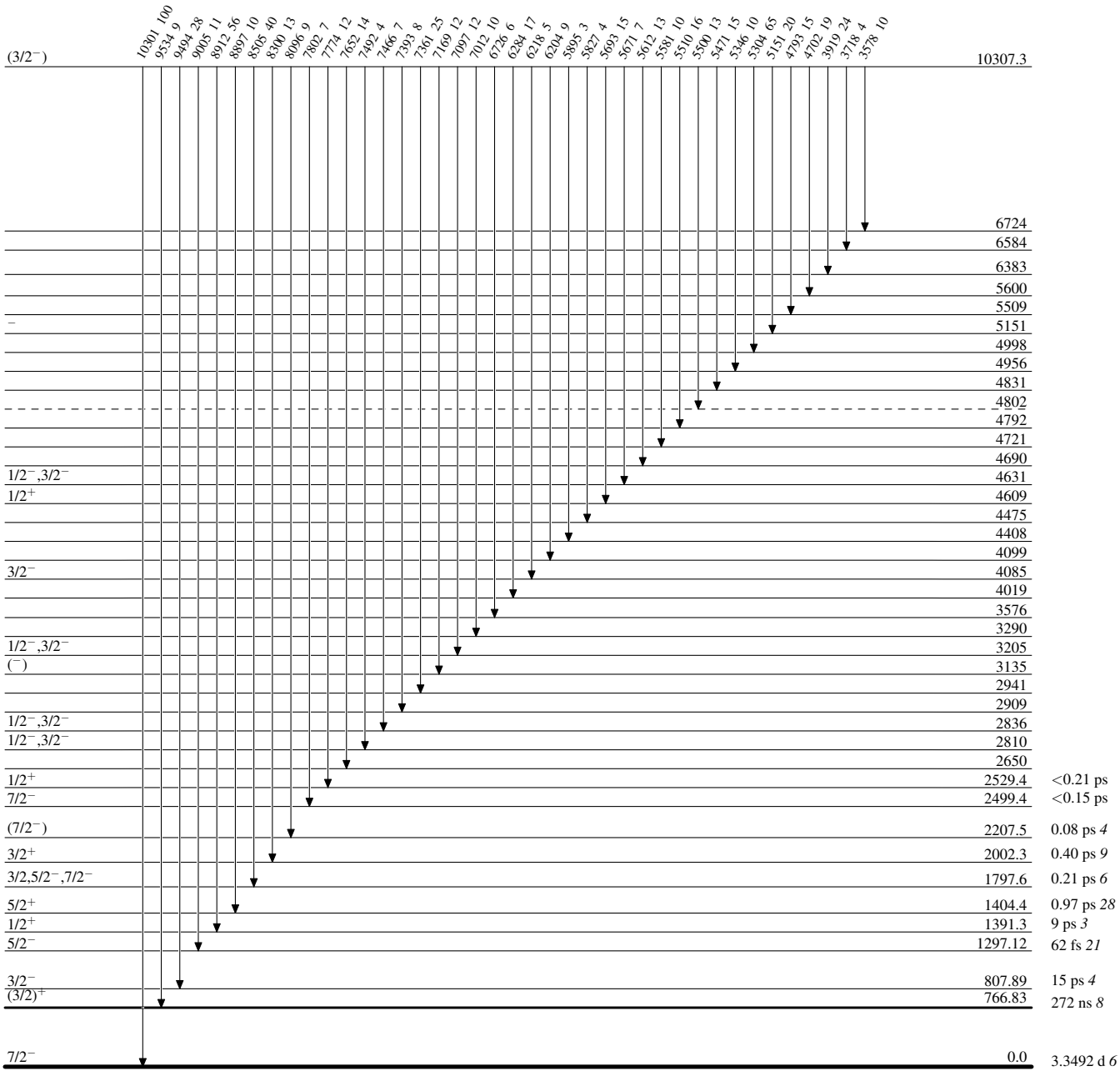
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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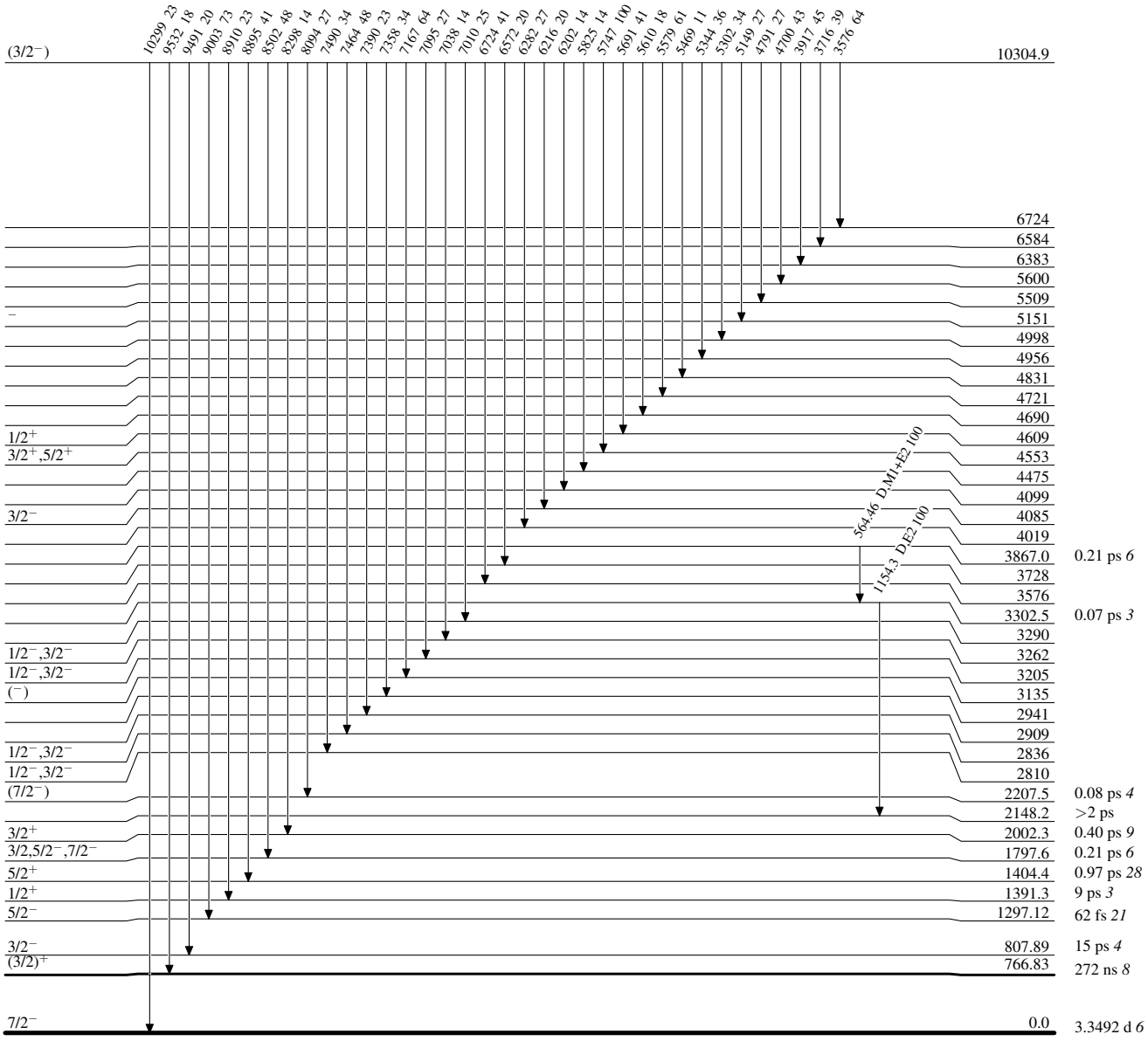
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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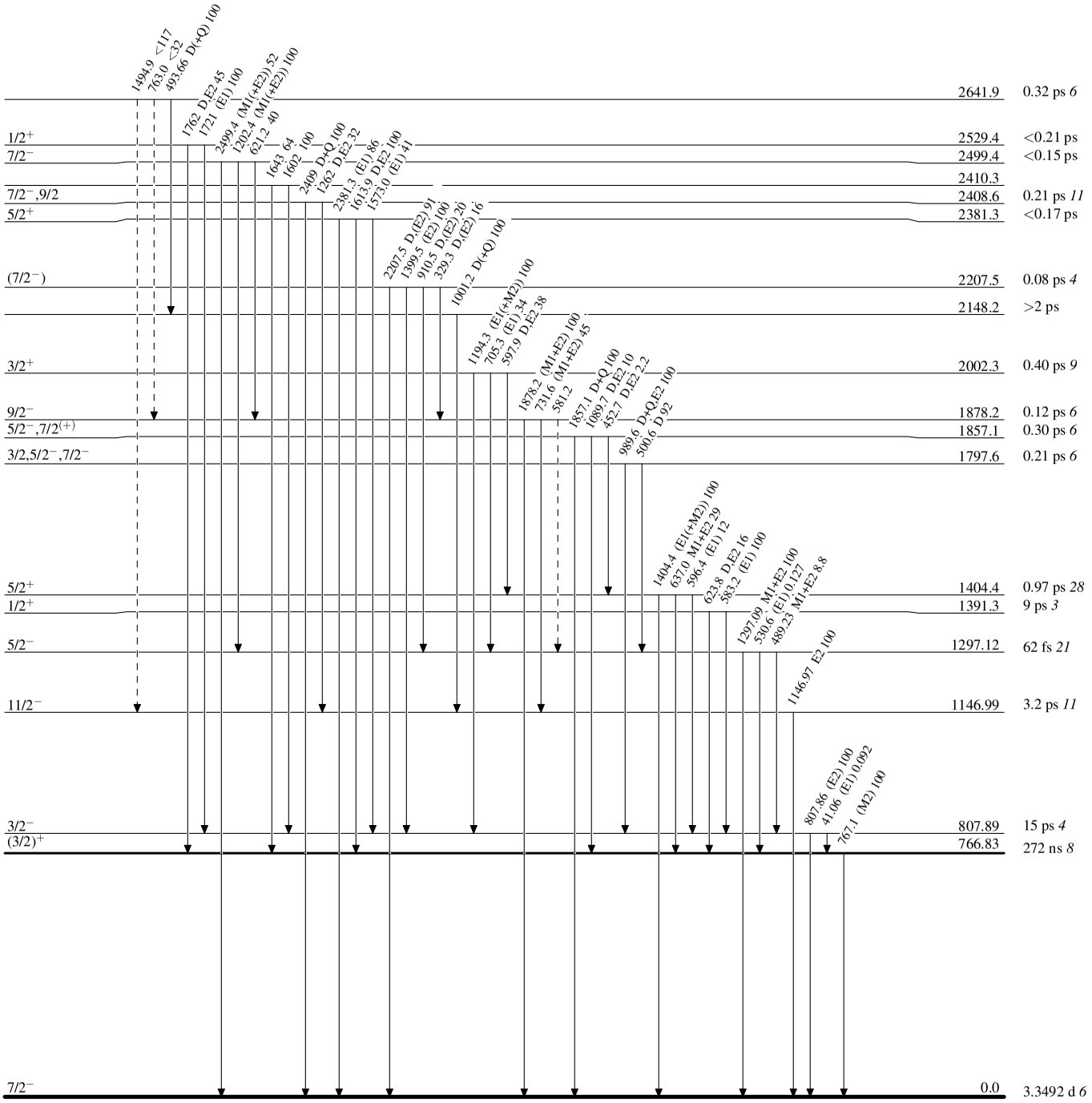
Adopted Levels, Gammas

Legend

Level Scheme (continued)

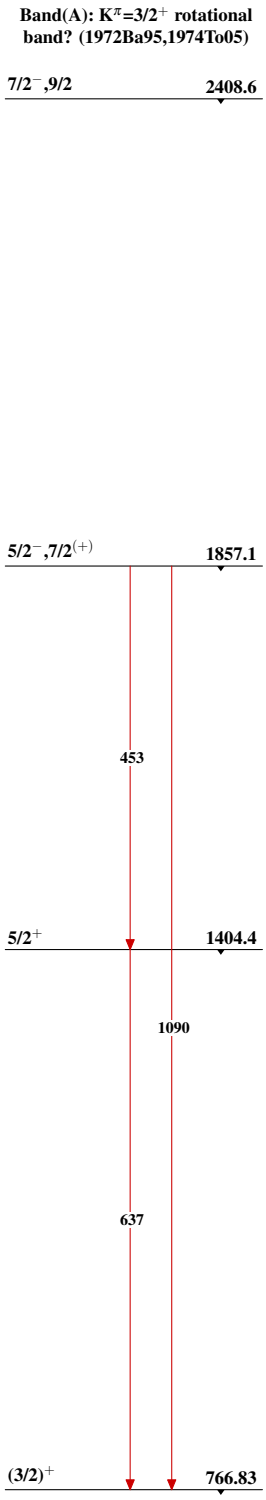
Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{47}_{21}Sc_{26}$

Adopted Levels, Gammas



$^{47}_{21}Sc_{26}$